a4 flange 202, the inner connector 236, resilient banana connectors 199, hollow cylindrical portions 196, and thermally conductive flange 202 are encapsulated and electrically isolated by the outer connector element 238. Moreover, the bottom portion 203 of the thermally conductive flange 202 is in direct contact with the cooling plate 167.

REMARKS

In this non-final Office Action (Paper No. 7) the Examiner notes that claims 1 through 21 are pending and stand rejected. In view of the following discussion, the applicants submit that none of the claims now pending in the application are anticipated or obvious under the provisions of 35 U.S.C. §102 and §103, respectively. Arguments are provided to more clearly describe the invention and to refute the views of the teachings of the references. Thus, the applicants believe that all of these claims are now in allowable form.

A. 35 U.S.C. §102

The Examiner has rejected claims 1-3, 8, 10, 11, 14, 16, 18, and 21 under 35 U.S.C. §102 as being anticipated by Tsuji, et al. (U.S. Patent No. 5,947,766, issued September 7, 1999, hereinafter "Tsuji"). The applicants respectfully traverse the rejection.

Claim 1 recites:

"An electrical coupler, comprising:
an inner connector element having opposing ends;
an upper end connector and an lower end connector; each end connector respectively coupled to one of said opposing ends of said inner connector element;
a thermally conductive flange circumscribing said inner connector; and
an outer connector element disposed over said inner connector and said thermally conductive flange." (emphasis added).

"Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim" (Lindenmann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984) (citing Connell v. Sears Roebuck & Company, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1983)) (emphasis added). The Tsuji reference fails to disclose each and every element of the claimed invention, as arranged in the claim.

In particular, the Tsuji reference discloses a rubber sheet 20 provided with a sleeve 25 having a flange 26 adapted to be inserted into a bolt through bore 16. More specifically, the rubber sheet 20 includes on each end a resilient rubber sleeve 25 having a resilient rubber flange 26 provided on the rear end of the sleeve 25. (See Tsuji, col. 5, lines 21 through 36 and Figure 5).

By contrast, the applicants' claim "a thermally conductive flange circumscribing said inner connector". The applicants' invention is completely different from the Tsuji reference, since Tsuji fails to teach a thermally conductive flange circumscribing the inner connector. Rather, Tsuji discloses that the flange is on the rear end of the sleeve (see Tsuji col. 5, lines 26-28).

It is also noted that the Tsuji reference fails to teach "a thermally conductive flange". As noted above, the Tsuji reference discloses that the rubber sheet 20 includes on each end a resilient rubber sleeve 20 having a resilient rubber flange 26 provided on the rear end of the sleeve 25 (see Tsuji col. 5, lines 26-28).

The Examiner has expanded upon the claim language to force the teachings of the prior art to fit the claimed element, and thereby support the conclusion of anticipation. Such action is not permissible. The prior art must be such that a person of ordinary skill in the field of the invention would consider there to be no difference between the claimed invention and the reference disclosure. Scripps Clinic & Research Foundation v. Genentech, Inc., 927 F.2d 1565, 18 USPQ 2d 1001, 1010 (Fed. Cir. 1991). In other words, the prior art reference must put the claimed invention in the hand of one skilled in the art. In re Donohue, 766 F.2d 531, 533, 226 USPQ 619, 621 (Fed. Cir. 1985).

Although any material may be said to have some thermal conductive property, those skilled in the art will appreciate that within the scope and spirit of the invention, rubber is not considered a thermally conductive material. The purpose of the flange in applicants' invention is two-fold. First, the flange may be used to attach the electrical coupler to a device, such as a cooling plate of a wafer chuck assembly. Secondly, the flange is used to thermally conduct heat away from the inner connector and thereby transfer such heat to the device that the inner connector end flange is attached. One skilled in the art would not consider using rubber as a material to thermally conduct heat away from the inner connector.

Furthermore, Tsuji fails to teach each end connector respectively coupled to one of the opposing ends of said inner connector element. Referring to Figure 5 of the Tsuji reference, the Examiner has interpreted the engine E as being a lower end connector. However, the Tsuji reference fails to disclose that the lower end connector is coupled to the inner connector element. Rather, the engine merely abuts the inner connector element. That is, the inner connector 20 merely interfaces or rests against the engine as shown in Figure 5 of the Tsuji reference. Accordingly, Tsuji fails to teach each end connector respectively coupled to one of the opposing ends of the inner connector. Therefore, the Tsuji reference fails to disclose each and every element of the claimed invention, as arranged in the claim.

As such, the applicants submit that independent claim 1 fully satisfies the requirements of 35 U.S.C. §102 and is patentable thereunder. Furthermore, claims 2, 3, 8, 10, 11, 14, 16, 18, and 21 depend, either directly or indirectly, from independent claim 1 and recite additional features thereof. As such, and for at least the same reasons set forth above, the applicants submit that these dependent claims are not anticipated from the teachings of the reference and fully satisfy the requirements of 35 U.S.C. §102 and are patentable thereunder. Therefore, the applicants respectfully request that the rejections be withdrawn.

B. 35 U.S.C. §103

The Examiner has rejected claims 4-7, 9, 17, and 19 under 35 U.S.C. §103 as being unpatentable over Tsuji in view of the applicants' admitted prior art (AAPA). The applicants respectfully traverse the rejection.

Claim 4 depends from claim 1 and recites additional limitations thereof. In particular, claim 1 recites:

> "An electrical coupler, comprising:
> an inner connector element having opposing ends;
> an upper end connector and an lower end connector; each end connector respectively coupled to one of said opposing ends of said inner connector element;
> a thermally conductive flange circumscribing said inner connector; and
> an outer connector element disposed over said inner connector and said thermally conductive flange.
> wherein said thermally conductive flange is fabricated from a ceramic material." (emphasis added)

The test under 35 U.S.C. § 103 is not whether an improvement or a use set forth in a patent would have been obvious or non-obvious; rather the test is whether the claimed invention, considered as a whole, would have been obvious. Jones v. Hardy, 110 USPQ 1021, 1024 (Fed. Cir. 1984) (emphasis added). Thus, it is impermissible to focus either on the "gist" or "core" of the invention, Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc., 230 USPQ 416, 420 (Fed. Cir. 1986) (emphasis added).

The combination of Tsuji and the AAPA fails to teach or suggest the applicants' invention as a whole. In particular, the references fail to teach or suggest an upper end connector and a lower end connector, where each end connector is respectively coupled to one of the opposing ends of the inner connector element. As discussed above with regard to the 35 U.S.C. §102 rejection, the Tsuji reference merely discloses that the lower end connector interfaces or abuts one of the opposing ends of the inner connector element. That is, the lower end of the inner connector is positioned adjacent or seated against the engine of the Tsuji reference.

The AAPA fails to bridge the substantial gap as between the Tsuji reference and the applicants' invention. In particular, the AAPA discloses a male and female connector, which may be coupled together to form electrical coupler. However, there is absolutely no teaching or suggestion of an inner connector in the AAPA. Even if two references could somehow be combined (and the applicants submit that they cannot be combined) the combined references merely teach a male connector coupled to one end of the inner connector and a female connector abutted against the other end of the inner connector. Therefore, the two references fail to teach the applicants' invention as a whole.

Furthermore, the combined references fail to teach or suggest a thermally conductive flange circumscribing the inner connector. As discussed above regarding the Tsuji reference, the flange fails to circumscribe the inner connector. The AAPA also fails to teach or suggest a thermally conductive flange circumscribing the inner connector. In fact, the AAPA is completely devoid of any teaching or suggestion of a flange. That is, there simply is no flange disclosed the AAPA. Accordingly, the combined references merely disclose an inner connector having a flange disposed on the rear end of the sleeve, as opposed to a thermally conductive flange circumscribing the inner connector. Therefore, the combination of the references fails to teach the applicants' invention as a whole.

Moreover, the invention as a whole is not restricted to the specific subject matter claimed, but also embraces its properties and the problem it solves. In re Wright, 6 USPQ 2d 1959, 1961 (Fed. Cir. 1988) (emphasis added). The applicant's flange is fabricated from a thermally conductive material. By contrast, the flange of Tsuji is made of rubber, which is not a thermally conductive material.

Although any material may be said to have some thermally conductive characteristics, those skilled in the art will appreciate that within the scope and spirit of the invention, rubber is not considered a thermally conductive material. The purpose of the flange being fabricated from a thermally conductive material is to conduct heat away from the inner connector, and thereby transfer such heat to the device that the inner connector end flange is attached. One skilled in the art would not consider using rubber as a material to thermally conduct heat away from the inner connector. That is, the thermally conductive material solves the problem of damaging the inner connector when subject to a high temperature environment (see specification, page 2, line 28 through page 3, line3).

As such, the applicants submit that dependent claim 4 fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder. Furthermore, claims 5-7, 9, 17, and 19 recite similar limitations as recited in dependent claim 4. As such, and for at least the same reasons set forth above, the applicants submit that these dependent claims are not obvious from the teachings of the reference and fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder. Therefore, the applicants respectfully request that the rejection be withdrawn.

CONCLUSION

Thus, the applicants submit that none of the claims presently in the application are anticipated or obvious under the respective provisions of 35 U.S.C. §102 and §103. Consequently, the applicants believe that all these claims are presently in condition for allowance. Accordingly, reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, it is requested that the Examiner

telephone Mr. Steven Hertzberg, telephone number (732) 530-9404, so that appropriate arrangements may be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

7/22/02

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APPENDIX I
Marked-Up Version Of The Specification

Page 4, beginning line 34 through page 5, line 11:

The chuck body 162 may be a ceramic material such as aluminum nitride, the electrode 73 may be a molybdenum mesh electrode, and the electrode connector 165 may be a molybdenum electrode connector plated with an electrically conductive material for conducting RF biasing power to the embedded electrode 73. Such plating material may be selected from the group comprising silver, gold, aluminum, nickel, copper, and any combination of metals thereof. A person skilled in the art will recognize that other ceramic materials may be used to fabricate the chuck body 162 such as boron nitride and the like. Furthermore, other materials may be used to fabricate the electrode 73, [such as _____, and the like,] as well as [configuring] configure the electrode 73 in concentric circles, a coil shape, zoned configurations, and the like.

Page 5, beginning line 12 through line 36:

The upper male connector 231 is a solid, generally cylindrical connector member fabricated from a thermally non-conductive metal [such as _____ and the like]. In the preferred embodiment, the upper male connector 231 is stainless steel. At the top of the upper male connector 231 is an integrally formed threaded projection 185 for threadedly engaging the internal threads provided in the bore 186 of the electrode connector 165 to mechanically and electrically interconnect the upper male connector 231 to the embedded electrode 73. In particular, at the top of the upper male connector 231 is a radially extending portion 187 that serves as a conductive RF path as between the upper male connector 231 and the electrode connector 165. The conductive RF path is formed after the threaded projection 185 is threaded into the bore 186 of the electrode connector 165 so that the radially extending portion 187 is flush against the electrode connector 165. Thus, the conductive RF path follows along the upper male connector 231, through the radially extending portion 187 to electrode connector 165, and then to the electrode 73. However, one skilled in the art will recognize that the chuck body 162, the chuck electrode connector 165, and the upper male electrode connector 231 may be coupled in any other manner suitable for rigidly securing each component together and providing an RF conductive path.

Page 5, beginning line 37 through page 6, line 11:

The upper male connector 231 is generally conical or has a tapered [bottom or] distal end 189. Moreover, the upper male connector 231 may be plated with electrically conductive material or successive layers of conductive materials such as aluminum, copper, silver, gold, and nickel. In the preferred embodiment, the plating is a successive layer of nickel, copper, nickel, and gold. In particular, the plating is performed to enhance RF current conduction, reduce the susceptibility to corrosion, minimize magnetic susceptibility, and minimize contact resistance between the upper male connector 231 and its female counterpart of the electrical coupler 230.

Page 8, beginning line 33 through page 9, line 6:

FIG. 3B is a detailed view of the circled portion of the electrical coupler 230 shown in FIG. 3A. The outer connector element 238 is preferably molded over top 205 and side 204 portions of the thermally conductive flange 202. Notwithstanding a bottom portion 203 of the flange 202, the inner connector 236, resilient banana connectors 199, hollow cylindrical portions 196, and thermally conductive flange 202 are encapsulated and electrically isolated by the outer connector element 238. Moreover, the bottom portion 203 of the thermally conductive flange 202 is in direct contact with the cooling plate 167.